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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,408	05/10/2001	Trent J. Brundage	EWG-144 US	8219

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EXAMINER
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TESLOVICH, TAMARA

ART UNIT	PAPER NUMBER
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2137

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/854,408	BRUNDAGE, TRENT J.
	Examiner Tamara Teslovich	Art Unit 2137

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 05.10.2001.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-23 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 05.10.2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>11/27/02 02/26/04</u> .	6) <input type="checkbox"/> Other: _____ .

**DETAILED ACTION*****Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 202A. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because they do not include suitable descriptive legends as per 37 CFR 1.84(o). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is

to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

Applicant refers to "machine controller 104" in line 16 on page 3, and then goes on to refer to "machine tool controller 104" in line 19 of the same page.

Applicant refers to "computer 102B" in line 18 on page 3, when he should have referred to "computer 100" as in his drawings.

Applicant refers to "display 100" in line 16 on page 3, when he should have referred to "display 101" as in his drawings.

Applicant refers to "part 201" in line 6 on page 4, and the goes on to refer to "circuit board 201" in line 10 of the same page.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 6-9, 12-13, and 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "said part" and "said watermark" in line 7. There is insufficient antecedent basis for these limitations in the claim.

Claim 2 recites the limitation "said watermark" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites the limitation "said part" in line 11. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitations "said digital watermark" in line 19 and "said part" in lines 19 and 20. There is insufficient antecedent basis for these limitations in the claim.

Claim 8 recites the limitations "said grid signal" in line 1 and "said part" in line 2. There is insufficient antecedent basis for these limitations in the claim.

Claim 9 recites the limitations "said grid signal" in line 3 and "said part" in line 4. There is insufficient antecedent basis for these limitations in the claim.

Claim 12 recites the limitation "said digital watermark" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "said digital watermark" in line 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "said item" in line 19. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites the limitation "said item" in line 21. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hudson, U.S. Patent 5,768,759 and further in view of Rhoads et al., U.S. Patent 6,614,914.

Claim 1 refers to:

A method for controlling placement of a first part on a second part comprising placing a printed image containing a digital watermark on at least one

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of said parts, capturing a digital image of said printed image, reading a grid signal contained in said digital watermark, and determining the angular rotation of said part from said watermark grid signal.

Hudson refers only to automatic apparatuses designed to pick up components from a component supply source and place such components on top of other components provided wherein the assembly "pick-and-place" machines are controlled by associated machine vision systems which utilize data collected with a fixed camera to identify the part and determine the position and angle of the part to be placed. Hudson fails to mention the use of a printed image containing a digital watermark on at least one of the parts where the watermark's grid signal contains information about location or orientation. (column 1 lines 15-34, column 2 lines 22-26, column 6 lines 65-67)

Rhoads et al describes the use of watermark systems comprising embedding a watermark into the surface texture of an object (or into an image taken thereof), scanning/capturing an image of the watermark, detecting and reading the watermark and its grid signals through the utilization of electronic processing circuitry and its necessary instruction set to retrieve the information contained therein including, but not limited to, location and orientation (column 1 lines 25-35, 64-67, column 2 lines 1-2, 14-16, column 32 lines 44-66, column 33 lines 1-28, column 34 lines 15-31).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Hudson et al's automated pick-and-place system, the watermark system as described in Rhoads et al to provide a secure

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method of identifying and positioning items without the need for human interaction.

As per claim 2, the modified system of Hudson and Rhoads et al discloses the method of claim 1 including reading other payload data from said watermark (see Rhoads et al column 2 lines 12-16, column 34 lines 15-31).

As per claim 3, the modified system of Hudson and Rhoads et al discloses the method of claim 1 wherein said grid signal is used to determine the location of said part (see Rhoads et al column 2 lines 7-8).

As per claim 4, the modified system of Hudson and Rhoads et al discloses the method recited in claim 1 wherein said first part is an electronic component (see Hudson column 1, lines 16-25).

As per claim 5, the modified system of Hudson and Rhoads et al discloses the method recited in claim 1 wherein said second part is a printed circuit board (see Hudson column 1, lines 16-25).

Claim 6 refers to:

A system for controlling a pick and placement machine which places a first part on a second part and wherein at least one of said parts includes a printed image containing a watermark, means for reading data from said digital watermark from said part, and means for determining the orientation of said part from the data read from said watermark.

Hudson refers only to automatic apparatuses designed to pick up electronic components from component supply sources and place such

components on printed circuit boards or on other substrates provided wherein the assembly "pick-and-place" machines are controlled by associated machine vision systems which utilize data collected with a fixed camera to identify the part and determine the position and angle of the part to be placed. Hudson fails to mention the use of a printed image containing a digital watermark on at least one of the parts where the watermark's grid signal contains information about location or orientation (column 1 lines 15-34, column 2 lines 22-26, column 6 lines 65-67).

Rhoads et al describes the use of watermark systems comprising embedding a watermark into the surface texture of an object (or into an image taken thereof), scanning/capturing an image of the watermark, detecting and reading the watermark and its grid signals through the utilization of electronic processing circuitry and its necessary instruction set to retrieve the information contained therein including, but not limited to, location and orientation (column 1 lines 25-35, 64-67, column 2 lines 1-2, 14-16, column 32 lines 44-66, column 33 lines 1-28, column 34 lines 15-31).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Hudson et al's automated pick-and-place system, the watermark system as described in Rhoads et al to provide a secure method of identifying and positioning items without the need for human interaction.

As per claim 7, the modified system of Hudson and Rhoads et al discloses the system of claim 6 including means for reading payload data from said

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watermark (see Rhoads et al column 1 lines 37-45, column 2 lines 12-16, column 34 lines 15-31).

As per claim 8, the modified system of Hudson and Rhoads et al discloses the system of claim 6 wherein said grid signal is used to determine location of said part (see Rhoads et al column 2 lines 7-8).

As per claim 9, the modified system of Hudson and Rhoads et al discloses the system of claim 6 wherein said grid signal is used to determine a distance of said part from said means for reading (see Rhoads et al column 2 lines 7-8).

As per claim 10, the modified system of Hudson and Rhoads et al discloses the system of claim 6 wherein said first part is an electronic component (see Hudson column 1, lines 16-25).

As per claim 11, the modified system of Hudson and Rhoads et al discloses the system of claim 6 wherein said second part is a printed circuit board (see Hudson column 1, lines 16-25).

Claim 12 refers to:

A robot for handling items, said robot including, a camera for acquiring an electronic image of a printed image containing a watermark, a computer including a program for reading a digital watermark in an electronic image acquired by said camera, a controller for controlling said robot in response to the data acquired from said digital watermark (see Rhoads et al column 33 lines 26-28, column 35 lines 5-27).

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Hudson refers only to automatic apparatuses, i.e. robots, designed to pick up components from a component supply source and place such components on top of other components provided wherein the assembly "pick-and-place" machines are controlled by associated machine vision systems which utilize data collected with a fixed camera to identify the part and determine the position and angle of the part to be placed. Hudson fails to mention the use of a printed image containing a digital watermark on at least one of the parts where the watermark's grid signal contains information about location or orientation. (column 1 lines 15-34, column 2 lines 22-26, column 6 lines 65-67)

Rhoads et al describes the use of watermark systems comprising embedding a watermark into the surface texture of an object (or into an image taken thereof), scanning/capturing an image of the watermark, detecting and reading the watermark and its grid signals through the utilization of electronic processing circuitry and its necessary instruction set to retrieve the information contained therein including, but not limited to, location and orientation (column 1 lines 25-35, 64-67, column 2 lines 1-2, 14-16, column 32 lines 44-66, column 33 lines 1-28, column 34 lines 15-31).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Hudson et al's automated pick-and-place system, the watermark system as described in Rhoads et al to provide a secure method of identifying and positioning items without the need for human interaction.

As per claim 13, the modified system of Hudson and Rhoads et al discloses the robot cited in claim 12 including means for reading a grid signal from said digital watermark (see Rhoads et al column 2 lines 3-20).

As per claim 14, the modified system of Hudson and Rhoads et al discloses the robot cited in claim 13 wherein said printed image is on an item to be handled by said robot (see Rhoads et al column 1 lines 57-67).

As per claim 15, the modified system of Hudson and Rhoads et al discloses the robot cited in claim 14 including means for determining a distance from said camera to said item from said grid signal (see Rhoads et al column 12 lines 52-65).

As per claim 16, the modified system of Hudson and Rhoads et al discloses the robot cited in claim 14 including means for determining an orientation of said item from said grid signal (see Rhoads et al column 12 lines 52-65).

Claim 17 refers to:

A method for controlling placement of a first part on a second part wherein the first part includes a digital watermark redundantly provided thereon, the digital watermark including an orientation component, said method comprising:  
Receiving image data corresponding to at least a portion of the first part, the portion including at least one redundant instance of the digital watermark; reading the orientation component of the digital watermark; determining an orientation of the first part through reference to at least the orientation component

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of the digital watermark; controlling placement of the first part on the second part through reference to at least the determined orientation of the first part.

Hudson refers only to automatic apparatuses, i.e. robots, designed to pick up components from a component supply source and place such components on top of other components provided wherein the assembly "pick-and-place" machines are controlled by associated machine vision systems which utilize data collected with a fixed camera to identify the part and determine the position and angle of the part to be placed. Hudson fails to mention the use of a printed image containing a digital watermark on at least one of the parts where the watermark's grid signal contains information about location or orientation. (column 1 lines 15-34, column 2 lines 22-26, column 6 lines 65-67)

Rhoads et al describes the use of watermark systems comprising embedding a watermark into the surface texture of an object (or into an image taken thereof), scanning/capturing an image of the watermark, detecting and reading the watermark and its grid signals through the utilization of electronic processing circuitry and its necessary instruction set to retrieve the information contained therein including, but not limited to, location and orientation (column 1 lines 25-35, 64-67, column 2 lines 1-2, 14-16, column 32 lines 44-66, column 33 lines 1-28, column 34 lines 15-31).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Hudson et al's automated pick-and-place system, the watermark system as described in Rhoads et al to provide a secure

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method of identifying and positioning items without the need for human interaction.

As per claim 18, the modified system of Hudson and Rhoads et al discloses the method of claim 17, wherein the determined orientation of the first part comprises an angular rotation of the first part (see Hudson abstract and Rhoads et al column 12 lines 52-65).

As per claim 19, the modified system of Hudson and Rhoads et al discloses the method of claim 17, wherein the determined orientation of the first part comprises an relative distance of the first part (see Hudson abstract and Rhoads et al column 12 lines 52-65).

As per claim 20, the modified system of Hudson and Rhoads et al discloses the method of claim 17, wherein the digital watermark further comprises an identifier to identify the part (see Hudson column 36 lines 54-59) .

Claim 21 refers to:

A robot for handling items, said robot comprising: an image sensor for sensing image data of an item including a digital watermark provided on a surface thereof wherein the digital watermark comprises an orientation component; electronic processing circuitry; and memory including instruction stored therein for execution by the electronic processing circuitry, the instructions including instruction to: analyze image data captured by the image senor, determine from analyzed image data an orientation of the item relative to the orientation component, and provide position information based on a determined orientation of the item.

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Hudson refers only to automatic apparatuses, i.e. robots, designed to sense and pick up components from a component supply source and place such components on top of other components provided wherein the assembly "pick-and-place" machines are controlled by associated machine vision systems which utilize data collected with a fixed camera to identify the part and determine the position and angle of placement (column 1 lines 15-34, column 2 lines 22-26, column 6 lines 65-67). Hudson fails to mention the use of a printed image containing a digital watermark on at least one of the parts where the watermark's grid signal contains information about location or orientation.

Rhoads et al describes the use of watermark systems comprising embedding a watermark into the surface texture of an object (or into an image taken thereof), scanning/capturing an image of the watermark, detecting and reading the watermark and its grid signals through the utilization of electronic processing circuitry and its necessary instruction set to retrieve the information contained therein including, but not limited to, location and orientation (column 1 lines 25-35, 64-67, column 2 lines 1-2, 14-16, column 32 lines 44-66, column 33 lines 1-28, column 34 lines 15-31).

It would have been obvious to a person of average skill in the area at the time of the invention to include within Hudson et al's automated pick-and-place system, the watermark system as described in Rhoads et al to provide a secure method of identifying and positioning items without the need for human interaction.

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As per claim 22, the modified system of Hudson and Rhoads et al discloses the robot of claim 21, wherein the item includes redundant instances of the digital watermark provided on the surface (see Rhoads column 2 lines 3-20, column 15 lines 50-53).

As per claim 23, the modified system of Hudson and Rhoads et al discloses the robot of claim 21, wherein the position information comprises at least one of an angular rotation and relative distance (see Hudson abstract and Rhoads et al column 12 lines 52-65).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamara Teslovich whose telephone number is (571) 272-4241. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571) 272-3868. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Andrew Caldwell*  
Andrew Caldwell